(c) an acceleration sensor for measuring one or more axis of acceleration of the navigational system, said acceleration sensor having a third output for providing a signal indicative thereof;

A1 cont'd

(d) a rotation sensor for measuring one or more axis of rotation of the navigational system, said rotation sensor having a fourth output for providing a signal indicative thereof; and

(e) a computing device having:

(i) a plurality of inputs, at least one input of said plurality of inputs in communication with each of said first, second, third, and fourth outputs; and

(ii) a database of the magnetic fields of the earth.

A2

3. The navigation system of claim 1 wherein said rotation sensor is a MEMS based gyroscope.

A3

5. The navigation system of claim 1 wherein said acceleration sensor is a MEMS based accelerometer.

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19. (Amended) A navigation system, comprising:

A4

a Global Positioning Sensor receiver adapted to receive electromagnetic signals from a plurality of satellites to determine a position, said Global Positioning Sensor receiver having a first output for providing a signal indicative said position;

an accelerometer for measuring one or more independent components of acceleration, said accelerometer having a second output for providing a signal indicative of said one or more independent components of acceleration;

a gyroscope for measuring three independent components of rotation, said rate gyroscope having a third output for providing a signal indicative of said three independent components of rate of rotation;

a display for visually displaying navigation information to an operator;

a computing device having a plurality of inputs for in communication with said first, second, and third outputs; and

a housing wherein is housed said Global Positioning Sensor receiver, said accelerometer, and said rate gyroscope, wherein said housing is configured such that the navigation system is portable.

A4 cancel

20. The navigation system of claim 19 wherein said gyroscope is MEMS based.

A5

22. The navigation system of claim 19 wherein said accelerometer is MEMS based.